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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,985	07/16/2003	Jackson Hsieh	2011116	1008

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EXAMINER	
YAM, STEPHEN K	

ART UNIT	PAPER NUMBER
2878	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/621,985	HSIEH ET AL.	
	Examiner	Art Unit	
	Stephen Yam	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 July 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the encapsulant encapsulating the lower metal sheets and the upper metal sheets must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Fig. 3 of Applicant's disclosure does not show the encapsulant encapsulating the lower metal sheets and the upper metal sheets. Instead, it appears (from Fig. 3) that Applicant's invention provides the encapsulant adjacent to and abutting the lower and upper metal sheets. Examiner refers Applicant to the definition of "encapsulate" in Merriam-Webster's Dictionary as "to enclose in or as if in a capsule". The lower and upper metal sheets in Applicant's invention (as seen in Fig. 3) are not enclosed by the encapsulant (54). It appears that the only element that may be encapsulated by the encapsulant is the middle board (76).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the

renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "24" has been used to designate both a wire (Fig. 1) and a lens holder (Fig. 2). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Double Patenting

3. Claims 1 and 6 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 6 of copending Application Nos. 10/621,986, 10/621,990, 10/621,991, 10/705,376, 10/705,377. Although the conflicting claims are not identical, they are not patentably distinct from each other because all

the applications are directed towards an image sensor module having a plurality of lower metal sheets, a plurality of upper metal sheets, and an encapsulant.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Objections

4. Claims 1, 5, 6, and 9 are objected to because of the following informalities:

In the claims, "the chamber" by itself lacks antecedent basis, as there are multiple defined chambers (a first defined by the encapsulant, a second for the lens holder, and a third for the the lens barrel).

Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 3, 4, 6, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hunter et al. US Patent No. 6,683,298 in view of Chen US Pre-grant Publication No. 2004/0041088.

Regarding Claims 1 and 6, Hunter et al. teach (see Fig. 3) an image sensor module to be electrically connected to a printed circuit board (304) (see Col. 7, lines 53-57) and a method for

manufacturing an image sensor module, comprising a plurality of first metal sheets (312) arranged in an array (see Fig. 4), each of the first metal sheets having an upper surface and a lower surface (see Fig. 3), a plurality of second metal sheets arranged in an array, each of the second metal sheets (underneath (312) connected to (306)) having an upper surface and a lower surface (see Fig. 3), the lower surfaces of the second metal sheets being stacked on the upper surfaces of the first metal sheets, an encapsulant (302) for encapsulating the first metal sheets and the second metal sheets (see Fig. 3), wherein the upper surfaces of the second metal sheets are exposed from the encapsulant, the lower surfaces of the first metal sheets are exposed from the encapsulant and electrically connected to the printed circuit board (see Fig. 3), and the encapsulant is formed with a frame layer (302) around the upper surfaces of the second metal sheets to define a chamber together with the second metal sheets (See Fig. 3), a photosensitive chip (310) arranged within the chamber, a plurality of wires (306) for electrically connecting the photosensitive chip to the upper surfaces of the second metal sheets, a transparent layer (320) arranged on the frame layer of the encapsulant to cover the photosensitive chip (see Fig. 3), a lens holder (330) formed with a chamber (fitting (324)) penetrating through the lens holder (see Fig. 3), the frame layer being fixed to the lens holder (see Fig. 3) so that the transparent layer is located at a side (bottom) of the chamber of the lens holder, and an aspheric lens (324) in the lens holder. Hunter et al. do not teach the first metal sheet as a *lower* metal sheet and the second metal sheet as an *upper* metal sheet, with the lens holder formed with an internal thread at a periphery of the chamber, with a lens barrel arranged within the chamber of the lens holder, the lens barrel being formed with an external thread screwed to the internal thread of the lens holder, wherein the lens barrel is formed with a chamber penetrating through the lens barrel and has a

transparent region and the lens in the chamber of the lens barrel from top to bottom. Chen teaches (see Fig. 1) a similar image sensor module, with a lens holder (4) formed with a chamber (within (4)) penetrating through the lens holder and an internal thread at a periphery of the chamber (see Fig. 1) and a lens barrel (housing surrounding (41)) arranged within the chamber of the lens holder (see Fig. 1), the lens barrel being formed with an external thread screwed to the internal thread of the lens holder (see Fig. 1), wherein the lens barrel is formed with a chamber (housing (41)) penetrating through the lens barrel and has a transparent region (area containing (41)) and an aspheric lens (41) in the chamber of the lens barrel from top to bottom. It is also well known in the art to re-arrange the placement of parts in relation to each other within a device, according to a desired configuration. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide first metal sheet as a *lower* metal sheet and the second metal sheet as an *upper* metal sheet, and provide the lens holder formed with an internal thread at a periphery of the chamber, with a lens barrel arranged within the chamber of the lens holder, the lens barrel being formed with an external thread screwed to the internal thread of the lens holder, wherein the lens barrel is formed with a chamber penetrating through the lens barrel and has a transparent region and the lens in the chamber of the lens barrel from top to bottom, as taught by Chen, in the device and method of Hunter et al., to provide a detachable solution for removing/replacing/switching lens components, and since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70.

Regarding Claim 3, Hunter et al. teach the encapsulant made of industrial plastic material (see Col. 4, lines 50-51) and integrally formed (see Fig. 3).

Regarding Claim 4, Hunter et al. teach the transparent layer as a piece of transparent glass (see Col. 5, lines 26-29).

Regarding Claim 8, Hunter et al. in view of Chen teach the method in Claim 6, according to the appropriate paragraph above. Hunter et al. also teach the encapsulant and the frame layer formed from industrial plastic material (see Col. 4, lines 50-51). Hunter et al. do not teach the encapsulant and the frame layer formed by way of injection molding. It is well known in the art to construct a plastic component using injection molding. It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the encapsulant and the frame layer using injection molding in the method of Hunter et al. in view of Chen, to provide common manufacturing techniques to lower production costs and increase yield.

7. Claims 2, 5, 7, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hunter et al. in view of Chen and Applicant's admitted prior art.

Regarding Claims 2 and 7, Hunter et al. in view of Chen teach the device and method in Claims 1 and 6, according to the appropriate paragraph above. Hunter et al. does not teach a middle board arranged among and flush with the upper metal sheets and the photosensitive chip being mounted to the middle board. Applicant's admitted prior art teaches (see Fig. 2) an image sensor module with an encapsulant (underneath the chip designated as (22) in Fig. 1) with a middle board arranged among and flush with upper metal sheets (the top level of the component designated as (12) in Fig. 1) and the photosensitive chip being mounted to the middle board (see Fig. 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a middle board arranged among and flush with the upper metal sheets and

the photosensitive chip being mounted to the middle board, as taught by Applicant's admitted prior art, in the device and method of Hunter et al. in view of Chen, to provide increased rigidity and stability in mounting the photosensitive chip.

Regarding Claims 5 and 9, Hunter et al. in view of Chen teach the device and method in Claims 1 and 6, according to the appropriate paragraph above. Hunter et al. does not teach the lens barrel having an infrared filter under the aspheric lens in the chamber. Applicant's admitted prior art teaches (see Fig. 2) a similar device, with a lens barrel (34) having an infrared filter (42) under an aspheric lens (40) in a chamber (see Fig. 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide an infrared filter under the aspheric lens in the chamber of the lens barrel, as taught by Applicant's admitted prior art, in the device and method of Hunter et al. in view of Chen, to remove unwanted light frequency components to provide a clearer detected image.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hashimoto US Patent No. 6,727,431, teaches an image sensor module with a lens holder and lens barrel.

Tsuchiya US Patent No. 6,359,740, teaches an image sensor module with a lens holder and lens barrel.

Exposito et al. WO 02/095837, teaches an image sensor module with an encapsulant encapsulating electrical components.

Bauer et al. US Patent No. 6,130,448, teaches an image sensor module with a plurality of metal sheets.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Yam whose telephone number is (571)272-2449. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571)272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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THANH X. LUU
PATENT EXAMINER